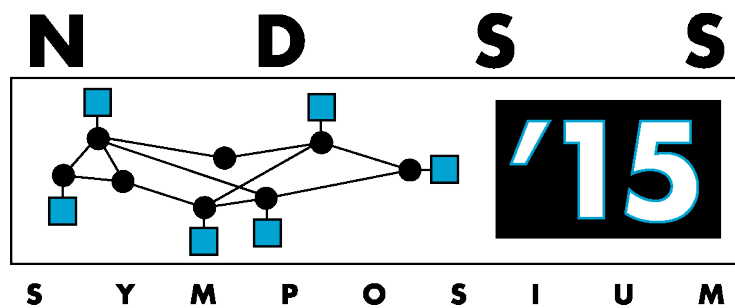


Proceedings

2015

Network and Distributed System Security Symposium



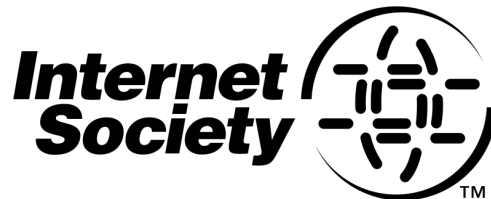
Proceedings

2015

**Network and Distributed
System Security Symposium**

February 8 – 11, 2015
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Sponsored by the
Internet Society





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General Chair's Message

It is my pleasure to welcome you to the 22nd Internet Society Symposium on Network and Distributed System Security (NDSS15).

From our very first workshop and continuing today, NDSS has striven to maintain the superior quality of our technical program. Our research domain continues to emphasize practical applications of security based on solid theoretical foundations. The program stretches from canonical to current, and includes both the theoretical and the pressing needs. This scope, along with a willingness to consider potentially controversial or unusual research, is the essential beauty of NDSS.

Again for our second year we have optional SENT and USEC full-day Workshops (Security of Emerging Network Technologies and Usable Security) on Sunday. These will bring together academic and industry researchers to discuss security problems, challenges, and potential solutions of emerging networking technologies such as Software Defined Networks, Named-Data-Networking and Cellular networks.

The main program this year packs a lot into three full days and includes 11 sessions. They cover a variety of current topics including a 4-part multiple session on Detection, Analysis, Prevention and Response. Other sessions cover such areas as Social and Cloud Services, Privacy, Web Security and Mobile Security. Our keynote speaker this year is Dr. Stephen Farrell, a research fellow in the department of Computer Science at Trinity College Dublin.

Although the symposium revolves around the technical presentations, there is far more to the experience. Take advantage of the hall track, the reception, the lunches, and the Tuesday banquet to meet new colleagues. These discussions are invaluable parts of the process of disseminating and discussing information. And finally, remember to save some time to enjoy our fantastic city.

This symposium is possible only through the hard work of many people. I would like to thank following: the NDSS steering group for charting a course for the conference that keeps its focus current, relevant, and practical; the conference committee for dealing with all the details to put together such an event and to publish its proceedings; and the Internet Society and its staff for their fantastic job with registration and all the work leading up to the conference. This meeting is as enjoyable and as successful as it is because of the efforts of these people -- it is no exaggeration to say that NDSS simply would not happen without each of their contributions.

The quality of this conference directly depends upon the quality of the papers accepted. The program committee, under the direction of Program Chair Engin Kirda of Northeastern University, has done a fantastic job and has selected an extraordinary set of papers. I thank Engin and the entire program committee for their expertise, hard work, and dedication. I also want to thank Adrian Perrig and Gene Tsudik for organizing and chairing the SENT workshop and Jens Grossklags for the organizing and chairing of the USEC workshop. Lastly, I also thank the authors who submitted papers and the speakers who are present; YOU are the core of this symposium.

I am also grateful for our sponsors, as it would be impossible to hold such an event without them. Our sponsors are the Internet Society for overall sponsorship, Cisco Systems for Gold Sponsorship; Afiliis, Qualcomm, and the San Diego Supercomputer Center @ UCSD (SDSC) for Silver sponsorship; Research at Google, IBM Research, and Microsoft Research for Bronze sponsorships, and IEEE Security and Privacy Magazine as our media sponsor. The conference is organized by the Internet Society, in cooperation with USENIX.

I would also like to thank my organization, the San Diego Supercomputer Center at the University of California San Diego, for supporting my involvement with this symposium over the last 22 years.

Finally, I want all of you to know that I view it as a great honor to chair this conference, one where the attendees and speakers are some of the finest minds in computer network security.

Thomas Hutton
General Chair, NDSS'15
San Diego Supercomputer Center
University of California, San Diego

Program Chair's Message

It is my great pleasure to welcome you to the 22nd Annual Network & Distributed System Security Symposium (NDSS 2015), held at the Catamaran Resort Hotel and Spa in San Diego, CA, United States on February 8-11, 2015. I was very honored to chair this year's NDSS -- a conference that fosters information exchange among researchers and practitioners of network and distributed system security. The target audience includes those interested in practical aspects of network and distributed system security, with a focus on actual system design and implementation. A major goal is to encourage and enable the Internet community to apply, deploy, and advance the state of network and distributed systems security technologies.

This year, NDSS received 300 valid submissions (i.e., not counting papers that clearly violated the submission guidelines). Submissions were evaluated on the basis of their technical quality, novelty, and significance. Papers went through two rounds of review. Reviewing culminated in a one-and-a-half-day in-person program committee meeting at Northeastern University in Boston, at which 50 papers (approximately 17%) were selected to appear at NDSS.

Organizing a conference as large as NDSS is a substantial endeavor, and I'd like to extend my sincere thanks to everyone who contributed his or her time and effort. I'd also like to specifically thank a few individuals who made particular contributions to NDSS 2015. Nicole Armstrong and Terry Weigler handled most of the logistics of organizing the conference, as well as the task difficult task of guiding a new program chair who was not familiar with the organizational specifics of NDSS. Srdjan Capkun served as the shadow chair and made my life as chair a lot easier with his advice, suggestions, and oversight. Also, it was great fun to work Srdjan. Thanks chiefly to the efforts and persistence of David Balenson, the Publications Chair, NDSS 2015 proceedings and papers have been assigned digital object identifiers (DOIs), enabling easier search and indexing. I would also like to thank everyone who accepted my invitation to serve on the program committee. I was very impressed because almost everyone was physically present at the PC meeting in Boston. It was my pleasure and honor to have worked with you to put together the program for NDSS 2015. Also crucial to the success of NDSS are the authors who submitted papers---thank you!---and the attendees. Welcome to NDSS, and I hope you find the program informative and stimulating.

**Engin Kirda
Program Chair, NDSS'15
Northeastern University**

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